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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Evaluation of forest fire models on a large observation database" *by* J.-B. Filippi et al.

Anonymous Referee #1

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In terms of presentation quality, I rate current presentation quality as Fair (3), and I explain why below.

To put my rating in context, I believe that Excellent (1) should be reserved for papers that make exceptionally significant contributions.

Other authors have attempted to determine the forecast quality of a single fire spread rate formulation for immediate operational use. This study is the first, to my knowledge, to use fire spread perimeters from a large number (80) of relatively small (simple fuel, Corsican) wildfires to compare the performance of the most current common European (Balbi) against the performance of the most current common American (Rothermel) fire-spread rate models, all run in fully-automated operational modes.

One outcome of the article could be, in my opinion, that studies like these can be available to wildfire managers and fighters as part of training exercises and actual field operations, so that users understand to what extent the accuracy of each of these four models may be limited. It is crucial that field workers know that the skill of the best model may not be high enough for a reliable use in operational context. The study could also inform users of the many assumptions that go into an operational setup, such as the wind does not change direction during the lifetime of the fire (page 3228, lines 27 to 28), that can possibly contribute to poor-quality forecasts. Another aspect of the study useful for operations is the statement on page 3235, lines 12 to 15, that a good local meteorological forecast alone could improve performance.

Page 3225, lines 18 to 20. The authors point out that later versions of the Rothermel model are available. One criticism of the study might be the older version of the Rothermel model used. Please explain why you used the older version as opposed to a more current version.

Page 3228, lines 6 to 28. Rewrite. As written it is not clear how the measured wind and fuel data are automatically preprocessed and readied for the fire propagation solver. On page 3235, lines 20 to 23, the authors write that "The meteorological values were taken at the closest observation station, even though the actual wind direction at the exact fire location may be significantly different." I understand that the authors were attempting to evaluate these models in a purely operational context, but the authors should explain, STEP-BY-STEP, how a user goes from the raw station wind observations to the wind value input into the fire propagation solver. The reason for this request is the authors use of WindNinja to output wind at the same resolution as the elevation field. This implies that the nearest (raw) station observation was NOT the wind observation used by ForeFire, but rather a WindNInja interpolated value. Please clarify.

Page 3228, lines 21 to 23. When used operationally, the nearest upstream station wind is used to drive the Rothermel spread rate model. Please explain why winds from the nearest station, not the nearest upstream station, were used.

Page 3231, lines 13 to 24. If some of the simulated results are based on data of poor quality, should they not be dropped from the scores? Or at least should scores based on some data quality selection also be reported? This would show just how much a poor quality wind forecast, for example, impacts fire spread forecasting.

Page 3236, lines 21 to 24 (Appendix A). One reason I am not satisfied with presentation quality is that the authors present, but do not discuss, figures 5 to 7. These figures examine a few individual fires tabled in Table 3, and so they should be discussed either under Section 4.2 or the Appendix A. Please include a small discussion for each of these figures.

The other reason is I think that Fig 2 needs a small change. I request that the grey used to delimit the upper and lower bounds of the lines be less opaque (and maybe a different colour), so that the lines showing scores become easier to compare/see. I don't believe that the grey colour used elsewhere to show burned area needs to be changed, as long as the caption in figures 3 to 7 tells the reader that the gray area is the burned area.

I am not going to correct language/grammar/typos in the article, except for one thing. In science, datum is singular and data are plural. So change sentences that use, for example, "the data is ...' to "the data are ..."

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 2, 3219, 2014.